



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/683,941	10/09/2003	Harlan T. Beverly	P17143	3879
46915	7590	11/29/2007	EXAMINER	
KONRAD RAYNES & VICTOR, LLP. ATTN: INT77 315 SOUTH BEVERLY DRIVE, SUITE 210 BEVERLY HILLS, CA 90212			HUSSAIN, TAUQIR	
ART UNIT		PAPER NUMBER		
2152				
MAIL DATE		DELIVERY MODE		
11/29/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/683,941	BEVERLY ET AL.
	Examiner	Art Unit
	Tauqir Hussain	2152

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 13 September 2007.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-30 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-30 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>09/13/2007</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

1. Claims 1-30 are pending in this application.

Response to Amendment

2. This office action is in response to amendment /reconsideration filed on 09/13/2007, the amendment/reconsideration has been considered. Claims 1, 10, 22, 21 and 30 have been amended. Claims 1-30 are pending for examination, the rejection cited as stated below.

Response to Arguments

3. Applicant's arguments have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as cited below.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.
5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim recite "the sending agent providing to the host at least some of the virtual memory addresses of the data to be sent to the destination". It is not clear whether host is within the same entity as source, which is "a host" in line 3, or the host is the host of destination?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 11-13 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Portfield (Patent No.: US 6480951 B2), "Portfield" and Tang et al (Patent No.: US 6298371 B1), hereinafter "Tang" further in view of Siddabathuni (Patent No.: US 7290038 B2), hereinafter "Siddabathuni".

7. As to claim 1, Portfield discloses, a host of the source providing to a sending agent of the source (Portfield, Fig.2, Col.3, lines 32-43, where host sends virtual address to sending agent which forwards that to address translator-205), virtual addresses of data to be sent to a destination (Portfield, Fig.2, Col.3, lines 45-50, where two tags are discloses as source and destination), each location having a physical address and a virtual memory address which is mapped to the physical address (Portfield, Fig.2, element- 205 is a address translator which means memory location is tied to virtual to physical or physical to virtual addresses);

The sending agent sending the identified data to the destination (Portfield, Fig.2, Col.4, lines 9-17, where data is sent to destination and sending agent could be PCI or AGP)

Portfield however is silent on disclosing explicitly, "wherein the data is stored in a plurality of physical locations of the source" or "the sending agent providing to the host at least some of the virtual memory of the data to be sent to the destination".

Tang however discloses, wherein the data is stored in a plurality of physical locations of the source (Tang, Fig.1, element-110, where main memory is shown as multiple data which means data is stored in plurality of locations in the memory) the sending agent providing to the host at least some of the virtual memory of the data to be sent to the destination (Tang, Col.73, lines 12-22, where host is exposed to all virtual address space, which means agent has provided full range of virtual addresses to the host).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Tang "making the virtual address available to host" with the teaching of Portfield to provide a system where two processors can access the common virtual address for enhanced processing of data from source to destination.

Portfield and Tang however are silent on, "the host identifying to the sending agent the data addressed by the virtual memory addresses provided by the sending agent".

Siddabathuni however discloses, "the host identifying to the sending agent the data addressed by the virtual memory addresses provided by the sending agent" (Siddabathuni, Fig.2 and Fig.3, Col.3, lines 58-67, where host identifies the virtual address by means of removing all of its local storage that was mapped to the virtual

address space before HCA can tear down a virtual address space, where HCA can be a
an agent).

Therefore, it would have been obvious to one ordinary skilled in the art at the
time the invention was made to combine the teachings of Portfield and Tang with the
teachings of Siddabathuni in order to provide a system to add host buffers to an existing
virtual address space, or remove host buffers from an existing virtual address space,
the interface returns the same key instead of a new one to keep the same process
going until it finishes the job.

8. As to claim 11, Portfield discloses, a system adapted to communicate with a destination (Portfield, Fig.1), comprising:
 - memory (Portfield, Fig.1, element-107 is memory);
 - a processor coupled to the system memory (Portfield, Fig.1, element-101 and 102, where Pentium-pro processors are coupled to memory 107 via system controller);
 - an operating system executable by the processor in memory (Portfield, Fig.1, where obviously there is a driver associated with the 3-D graphic controller)
 - a network adaptor (Portfield, Fig.1, element-111 or 113 means there is a network adapter in a computer system of Portfield);
 - data storage (Portfield, Fig.1, element-107 buffer pool is a data storage);
 - a data storage controller adapted to manage Input/Output (I/O) access to the data storage (Portfield, Fig.2, element-105); and

a device driver executable by the processor in the memory (Portfield, Fig.1, obviously there is a driver associated with every hardware device, upon execution hardware functions accordingly),

wherein the memory and the data storage each comprise physical locations adapted to store data, each location having a physical address and a virtual address which is mapped to the physical address (Portfield, Fig.2, element-205, which is an address translator between physical to virtual or virtual to physical, meaning addresses are stored in virtual and physical locations). Rejections to the further limitations can be found in claim 1 above.

9. Claim 21 has similar limitation as claims 1 and 11 above; therefore claim 21 is rejected for under same rationale.

10. As to claims 2, 12 and 22, Portfield, Tang and Siddabathuni discloses the invention substantially as in parent claim 1, 11, and 21, including, wherein, the sending agent storing the data received from the host in a buffer of the sending agent (Portfield, Fig.2, Element-209, obviously sending agent keeps the stores the data in buffer pool).

11. As to claims 3, 13 and 23, Tang and Siddabathuni discloses the invention substantially as in parent claim 1, 11, and 21, including, wherein, the host identifying data comprises the host providing to the sending agent the physical addresses of the locations containing the data addressed by the virtual memory addresses provided by the sending agent (Portfield, Fig.2, element-205, where data provided by the host to the agent is translated from virtual to physical by address translator 205).

12. Claims 4-7,10, 14-17, 20, 24-27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Portfield, Tang and Siddabathuni as applied to claims 1-3, 11-13 and 21-23 above further in view of Applicant admitted prior art, hereinafter, "AAPA".

13. As to claims 4, 14 and 24 have similar limitations as claims 1, 11 and 21, therefore, they are rejected for under same rationale, further, Portfield, Tang and Siddabathuni are silent on disclosing explicitly, pinning the physical memory locations of the first memory provided by the host to the sending agent to prevent the data addressed by the virtual addresses provided by the sending agent from being swapped to the second memory.

AAPA however discloses, pinning the physical memory locations of the first memory provided by the host to the sending agent to prevent the data addressed by the virtual addresses provided by the sending agent from being swapped to the second memory (AAPA, Fig.2, block-52 first memory is pinned by host and host sends the pinned addresses to tcp agent, Page.5, [0013], where pinning these memory locations prevents the data swapped to the second memory).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Portfield, Tang and Siddabathuni with the teachings of AAPA in order to protect the data transmission by not allowing other applications to access the memory until the transmission of data is completed.

14. As to claims 5, 15 and 25, Portfield, Tang, Siddabathuni and AAPA discloses the invention substantially as in parent claims, 4, 14 and 24, including, the sending agent

retrieving from the pinned physical memory locations of the first memory (Page.1, line 18, transport protocol driver is sending agent, (AAPA, Page.5, [0013], where pinning of physical location is explained and host provides the physical location against sending agents virtual address from which sending agent retrieves the data before sending to destination), the data addressed by the virtual addresses provided by the sending agent (Siddabathuni, Fig.2 and Fig.3, Col.3, lines 58-67, where host identifies the virtual address by means of removing all of its local storage that was mapped to the virtual address space before HCA can tear down a virtual address space, where HCA can be a an agent); and

unpinning the pinned physical memory locations of the first memory after the sending agent sends to the destination (AAPA, Page.5, [0013], lines 21-23], after completion of data transmission host unpins the memory so data can be swapped to secondary storage location) the data addressed by the virtual addresses provided by the sending agent (Siddabathuni, Fig.2 and Fig.3, Col.3, lines 58-67, where host identifies the virtual address by means of removing all of its local storage that was mapped to the virtual address space before HCA can tear down a virtual address space, where HCA can be a an agent).

15. As to claims 6, 16 and 26, Portfield, Tang, Siddabathuni and AAPA discloses the invention substantially as in parent claims, 1, 11 and 21, including, receiving from the destination an acknowledgment for data successfully sent by the sending agent and received by the destination (AAPA, Page.5, [0013, lines 16-19]);

wherein the virtual memory addresses provided by the sending agent to the host are the virtual addresses of data sent by the sending agent to the destination (Siddabathuni, Fig.2 and Fig.3, Col.3, lines 58-67, where host identifies the virtual address by means of removing all of its local storage that was mapped to the virtual address space before HCA can tear down a virtual address space, where HCA can be a an agent) but not acknowledged as successfully received by the destination (AAPA, Page.5, [0013, lines 20-21, where unacknowledged packet are resent means it is acknowledging that packets were not send successfully]).

16. As to claims 7, 17 and 27, Portfield, Tang, Siddabathuni and AAPA discloses the invention substantially as in parent claims, 1, 11 and 21, including, receiving from the destination an acknowledgment for data successfully sent by the sending agent and received by the destination (AAPA, Page.5, [0013, lines 16-19], where sending agent receiving as acknowledged packets);

the sending agent providing to the host the virtual addresses of data sent by the sending agent to the destination (Siddabathuni, Fig.2 and Fig.3, Col.3, lines 58-67, where host identifies the virtual address by means of removing all of its local storage that was mapped to the virtual address space before HCA can tear down a virtual address space, where HCA can be a an agent) but not acknowledged as successfully received by the destination (AAPA, Page.3, [0007], where destination host sends acknowledgment to the source host and resending unacknowledged packets means packets are not acknowledged);

the host identifying to the sending agent the unacknowledged data addressed by the memory addresses provided by the sending agent (Page.5, lines 20-21, where resending data means data has already been identified by host based on the addresses sent by sending agent); and

the sending agent resending the identified unacknowledged data to the destination (Page.5, [0013] lines 20-21).

17. As to claims 10, 20 and 30, Portfield, Tang, Siddabathuni and AAPA discloses the invention substantially as in parent claims, 1, 11 and 21, including, pinning the locations of the first memory storing the data to be sent to prevent the data to be sent from being swapped to the second memory (AAPA, Fig. 2, Page.5, [0013], lines 11-14, where physical memory is first memory and long term memory is second memory and first memory is pinned so data can not be swapped while transmission is in progress);

the host providing to the sending agent in addition to the virtual memory addresses of the data to be sent, the physical addresses of the locations of the first memory storing the data to be sent (AAPA, Page.5, [0013], lines 14-16], where host providing the sending agent a physical address of the data to be sent);

the sending agent retrieving from the pinned locations of the first memory, the data to be sent (AAPA, Page.5, [0013], lines 16-17]); and unpinning the pinned locations of the first memory storing the data to be sent after the sending agent retrieves the data from the pinned locations of the first memory storing the data to be sent (AAPA, Page.5, [0013], lines 21-23]).

wherein the sending by the sending agent of the identified data to the destination includes sending the identified data in data packages over a network to the destination in accordance with at least a transport protocol (AAPA, [0004], where transport protocol include packaging data in TCP/IP packets and these sending operations are performed by sending agent to the destination).

18. Claims 8-9, 18-19 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Portfield, Tang and Siddabathuni further in view of Dunham (Patent No.: US 6269431 B1), hereinafter "Dunham".

19. As to claim 8, 18 and 28, Portfield, Tang and Siddabathuni discloses the invention substantially as in parent claims, 1, 11 and 21, including, the host providing virtual addresses to the sending agent (Siddabathuni, Fig.2 and Fig.3, Col.3, lines 58-67, where host identifies the virtual address by means of removing all of its local storage that was mapped to the virtual address space before HCA can tear down a virtual address space, where HCA can be a an agent). However Portfield, Tang and Siddabathuni are silent on "includes the host providing to the sending agent at least one data structure which includes in an address field containing the virtual address of one of a plurality of memory locations storing a block of data to be sent to the destination, a size field containing a value representing the size of the block of data or a sequence number field containing a value representing a packet sequence number associated with data within the block of data".

Dunham however discloses, includes the host providing to the sending agent at least one data structure which includes in an address field containing the virtual address of one of a plurality of memory locations storing a block of data to be sent to the destination (Dunham, Fig.6, Col.12, lines 40-55, where logical data structures are described), a size field containing a value representing the size of the block of data (Dunham, Fig.6, Col.12, lines 44-45, where file space region 113 could be the size of the block of data); and

a sequence number field containing a value representing a packet sequence number associated with data within the block of data (Dunham, Fig.6, Col.12, lines 40-55, where storing a tag for the back up version could be the sequence number).

20. As to claims 9, 19 and 29 have similar limitations as claims 8, 18 and 28; therefore they are rejected for under same rationale.

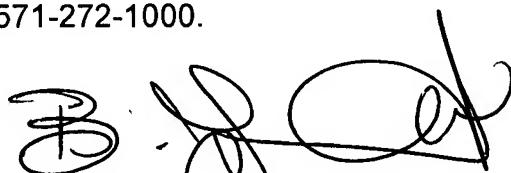
21. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references, as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in its entirety as potentially teaching of all or part of the claimed invention, as well as the context.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tauqir Hussain whose telephone number is 571-270-1247. The examiner can normally be reached on 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571 272 3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



BUNJOB JAROENCHONWANIT
SUPERVISORY PATENT EXAMINER

TH
11/14/2007

11/21/7